

## **OIL ANALYSIS REPORT**







#### Component Diesel Engine

Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

### Fluid Condition

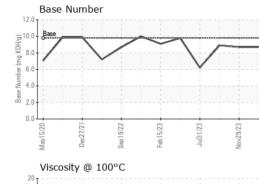
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

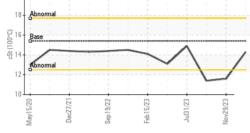
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0100544	GFL0100478	GFL0100532
Sample Date		Client Info		02 Jan 2024	29 Nov 2023	20 Nov 2023
Machine Age	hrs	Client Info		32722	9626	9559
Oil Age	hrs	Client Info		0	9626	9559
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	ATTENTION	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	0.7
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	12	30	25
Chromium	ppm		>20	<1	2	2
Nickel	ppm	ASTM D5185m	>4	<1	0	0
Titanium	ppm	ASTM D5185m	- T	<1	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm		>20	2	7	6
Lead	ppm		>40	- <1	0	0
Copper	ppm		>330	2	1	1
Tin	ppm		>15	- <1	1	2
Vanadium	ppm	ASTM D5185m	210	0	<1	<1
Cadmium	ppm	ASTM D5185m		<1	0	0
	1010				*	*
					hint a mut	bister 0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	<1	101	87
Boron Barium	ppm ppm					87 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 8 63	101 0 4	87 0 4
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0 0 60 0	<1 8	101 0 4 1	87 0 4 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	<1 8 63 <1 948	101 0 4 1 755	87 0 4 1 715
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	<1 8 63 <1 948 1108	101 0 4 1 755 1291	87 0 4 1 715 1311
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	<1 8 63 <1 948 1108 947	101 0 4 1 755 1291 721	87 0 4 1 715 1311 719
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	<1 8 63 <1 948 1108	101 0 4 1 755 1291 721 849	87 0 4 1 715 1311 719 822
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 8 63 <1 948 1108 947	101 0 4 1 755 1291 721 849 3025	87 0 4 1 715 1311 719 822 2993
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	<1 8 63 <1 948 1108 947 1199 3113 current	101 0 4 1 755 1291 721 849 3025 history1	87 0 4 1 715 1311 719 822 2993 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 8 63 <1 948 1108 947 1199 3113 current 4	101 0 4 1 755 1291 721 849 3025 history1 12	87 0 4 1 715 1311 719 822 2993 history2 12
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	<1 8 63 <1 948 1108 947 1199 3113 Current 4 6	101 0 4 1 755 1291 721 849 3025 history1 12 4	87 0 4 1 715 1311 719 822 2993 history2 12 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	<1 8 63 <1 948 1108 947 1199 3113 current 4 6 20	101 0 4 1 755 1291 721 849 3025 history1 12 4 3	87 0 4 1 715 1311 719 822 2993 history2 12 5 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25	<1 8 63 <1 948 1108 947 1199 3113 current 4 6 20 current	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1	87 0 4 1 715 1311 719 822 2993 <b>history2</b> 12 5 4 <b>history2</b>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	<1 8 63 <1 948 1108 947 1199 3113 current 4 6 20 current 0.6	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1 0.3	87 0 4 1 715 1311 719 822 2993 history2 12 5 4 kistory2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3 >20	<1 8 63 <1 948 1108 947 1199 3113 Current 4 6 20 Current 0.6 7.3	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1 0.3 7.4	87 0 4 1 715 1311 719 822 2993 history2 12 5 4 4 history2 0.1 6.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	<1 8 63 <1 948 1108 947 1199 3113 current 4 6 20 current 0.6	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1 0.3	87 0 4 1 715 1311 719 822 2993 history2 12 5 4 kistory2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3 >20	<1 8 63 <1 948 1108 947 1199 3113 Current 4 6 20 Current 0.6 7.3	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1 0.3 7.4	87 0 4 1 715 1311 719 822 2993 history2 12 5 4 4 history2 0.1 6.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 8 63 <1 948 1108 947 1199 3113 current 4 6 20 current 0.6 7.3 19.0	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1 0.3 7.4 18.1	87 0 4 1 715 1311 719 822 2993 <b>history2</b> 12 5 4 <b>history2</b> 0.1 6.8 17.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	<1 8 63 41 948 1108 947 1199 3113 Current 4 6 20 Current 0.6 7.3 19.0 Current	101 0 4 1 755 1291 721 849 3025 history1 12 4 3 3 history1 0.3 7.4 18.1	87 0 4 1 715 1311 719 822 2993 history2 12 5 4 5 4 <b>history2</b> 0.1 6.8 17.7 <b>history2</b>

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# **OIL ANALYSIS REPORT**





VISUAL						
		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	<b>1</b> 1.6	▲ 11.4
GRAPHS						
Ferrous Alloys						
nickel						
	Feb 15/23	EZI ISIN				
May15/20 0 07 Dec21/21 Sep19/22						

Base Number

Dec27/21

Sep19/22

12.0

10.

8 (

6.0 4.0

2 (

0.0

May15/20 -

Base Number (mg KOH/g)



 Unique Number
 : 10819403
 Diagnostician
 : Wes Davis

 Certificate 12367
 Test Package
 : FLEET

 To discuss this sample report, contact Customer Service at 1-800-237-1369.
 \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Sep19/22.

Jul31/23 -

Nov29/23

: 08 Jan 2024

: 09 Jan 2024

Feb15/23

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Recieved

Diagnosed

Viscosity @ 100°C

Dec27/21

: GFL0100544

: 06053454

19

18

17

16

12

11-10-

Laboratory

Sample No.

Lab Number

May15/20

(100°C) 14 14

Submitted By: TECHNICIAN ACCOUNT

Feb 15/23

GFL Environmental - 865 - East Mount Hauling

7213 East Mount Houston Road

T:

F:

Vov29/23

Houston, TX US 77050

Contact: Saul Castillo

saul.castillo@gflenv.com